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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/758,136	01/16/2004	Eun-Kyung Lee	030681-624	5019

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EXAMINER

SCHILLINGER, LAURA M

ART UNIT PAPER NUMBER

2813

DATE MAILED: 09/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/758,136

Applicant(s)

LEE ET AL.

Examiner

Laura M. Schillinger

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 July 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-35 is/are pending in the application.
- 4a) Of the above claim(s) 13-35 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 1/16/04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

Claims 13-35 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected claims, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 7/1/05. Applicant's election with traverse of claims 1-12 in the reply filed on 7/1/05 is acknowledged. The traversal is on the ground(s) that claim 13 is a generic claim. This is not found persuasive because claim 13 is not generic, rather claim 13 pertains to a device which is a separate statutory class of invention from that of the elected method claims.

The requirement is still deemed proper and is therefore made FINAL.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-2, 5-12 are rejected under 35 U.S.C. 102(e) as being anticipated by Choi et al
(‘330)

The applied reference has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C.

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102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

Choi teaches the following claimed limitations as cited below:

1. A method of manufacturing a silicon optoelectronic device comprising:

preparing an n- or p-type silicon-based substrate (Abs., lines: 1-5);

forming a microdefect pattern along a surface of the substrate by etching (Col.6, lines: 40-55);

forming a control film with an opening on the microdefect pattern (Col.5-6, lines: 55-15); and

forming a doping region on the surface of the substrate having the microdefect pattern in such a

way that a predetermined dopant of the opposite type to the substrate is injected onto the substrate through the opening of the control film to be doped to a depth so that a photoelectric

conversion effect leading to light emission and/or reception by quantum confinement effect in a

p-n junction occurs (Col.6, lines: 35-55).

2. The method according to claim 1, wherein forming the microdefect pattern comprises:

forming a mask layer on the surface of the substrate;

forming openings of a desired size and period in the mask layer;

etching the surface of the substrate corresponding to the openings of the mask layer to form the microdefect pattern along the surface of the substrate; and

removing the mask layer (Col.5-6, lines: 55-15).

5. The method according to claim 1, wherein the control film is a silicon oxide film to allow the doping region to be formed to the depth such that a photoelectrical conversion effect by quantum confinement in the p-n junction between the doped region and the substrate occurs (Col.6, lines: 35-55).
6. The method according to claim 1, further comprising forming first and second electrodes on the substrate to be electrically connected to the doping region (Fig.3 (17)).
7. The method according to claim 1, wherein forming the doping region is carried out by non-equilibrium diffusion of the predetermined dopant (Col.5, lines: 45-50).
8. The method according to claim 1, wherein the control film is selectively removed after the formation of the doping region (Col.5-6, lines: 55-15).
9. The method according to claim 1, wherein the microdefect pattern has a period corresponding to the wavelength of light emitted and/or received (Col.6, lines: 40-50).
10. The method according to claim 9, wherein the microdefect pattern is formed to a single period to emit and/or receive light of a single wavelength (Col.7, lines: 40-50).
11. The method according to claim 10, wherein when the control film is formed with a plurality of openings on the microdefect pattern and a plurality of doping regions are formed through the

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openings, an array of a plurality of silicon optoelectronic devices is formed (Col.5-6, lines: 55-15).

12. The method according to claim 9, wherein when the microdefect pattern is formed to a plurality of microdefect pattern regions having different periods, the control film is formed with a plurality of openings corresponding to the periods, and a plurality of doping regions are formed through the openings, an array of a plurality of silicon optoelectronic devices that emit and/or receive light of a plurality of wavelengths is formed (Col.7, lines: 40-60).

Allowable Subject Matter

Claims 3 and 4 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

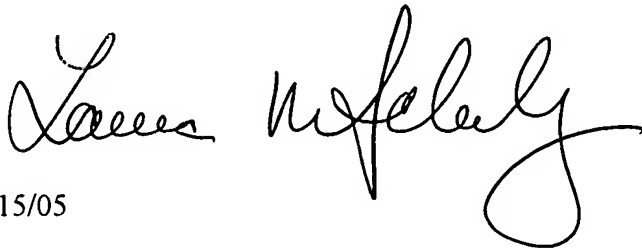
The following is a statement of reasons for the indication of allowable subject matter: In reference to claim 3, prior art fails to teach nor suggest a method according to claim 2, wherein forming the openings of a desired size and period in the mask layer is carried out using a single probe or a multi-probe having an array of a plurality of probes. Further in reference to claim 4, prior art fails to teach the method according to claim 3, wherein the probe is an atomic force microscopy (AFM) probe.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Laura M. Schillinger whose telephone number is (571) 272-1697. The examiner can normally be reached on M-T, R-F 7:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl W. Whitehead, Jr. can be reached on (571) 272-1702. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'Laura M. Schillinger', with a large, stylized loop at the end of the signature.

Laura M Schillinger
Primary Examiner
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09/15/05